WHAT WE CLAIM IS:

1. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group comprises, in order from an object side thereof, a negative lens component, a negative lens component and a positive lens component,

said third lens group consists of one lens element,

said first lens group further comprises a lens element having an aspherical surface that satisfies the following condition (1), and

said third lens group further comprises a lens element having an aspherical surface that satisfies the following condition (2):

$$0 < (1/r_{a1} - 1/r_{m1})h_1/(n_{a1} - n_{a1}') < 1 \qquad \cdots (1)$$

$$-1 < (1/r_{a3} - 1/r_{m3})h_3/(n_{a3} - n_{a3}') < 0 \qquad \cdots (2)$$

where r_{a1} is a paraxial radius of curvature of an aspherical surface I located in said first lens group, r_{m1} is a distance from a point of intersection of an optical axis with said aspherical surface I located in said first lens group to a

point on the optical axis where a normal to an arbitrary point (1) between the maximum diameter of an axial light beam on said aspherical surface I and an effective diameter including an off-axis light beam on said aspherical surface I is closest to the optical axis, n_{a1} is a refractive index of said aspherical surface I on an object side thereof, n_{a1}' is a refractive index of said aspherical surface I on an image side thereof, h_1 is a height of said point (1) from the optical axis, r_{a3} is a paraxial radius of curvature of an aspherical surface III located in said third lens group, r_{m3} is a distance from a point of intersection of the optical axis with said aspherical surface III located in said third lens group to a point on the optical axis where a normal to an arbitrary point (3) between the maximum diameter of an axial light beam on said aspherical surface III and an effective diameter including an off-axis light beam on said aspherical surface III is closest to the optical axis, n_{a3} is a refractive index of said aspherical surface III on an object side thereof, n_{a3}' is a refractive index of said aspherical surface III on an image side thereof, and h_3 is a height of said point (3) from the optical axis.

2. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between

adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element, and

said first lens group comprises a lens element obtained by coating a thin resin on a concave surface of a spherical lens element satisfying the following condition (3), thereby forming an spherical surface thereon:

$$-0.1 < (1/r_{a1}' - 1/r_{m1})h_1/(n_{a1} - n_{a1}') < 1 \quad \cdots (3)$$

where r_{a1}' is a paraxial radius of curvature of the concave surface coated thereon with the resin to form an aspherical surface I located in said first lens group, r_{m1} is a distance from a point of intersection of an optical axis with said aspherical surface I located in said first lens group to a point on the optical axis where a normal to an arbitrary point (1) between the maximum diameter of an axial light beam on said aspherical surface I and an effective diameter including an off-axis light beam on said aspherical surface I is closest to the optical axis, n_{a1} is a refractive index of said aspherical surface I on an object side thereof, n_{a1}' is a refractive index of said aspherical surface I on an image side thereof, and h_1 is a height of said point (1) from the optical axis.

3. zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group

having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group consists of, in order from an object side thereof, a negative lens component, air, a negative lens component, air and a positive lens component,

said third lens group consists of one lens element, and

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive element and a negative element and a positive lens component, and

the following condition (4) is satisfied:

$$0.4 < f_3/f_t < 2.5 \qquad \cdots (4)$$

where f_3 is a focal length of said third lens group and f_t is a focal length of said zoom lens system at a telephoto end thereof.

4. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between

adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group consists of, in order from an object side thereof, a negative lens component, air, a negative lens component, air and a positive lens component,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive element and a negative element and a positive lens component, and

the following condition (5) is satisfied:

$$1.2 < f_{1-N}/f_{2-N} < 2.7 \quad \cdots (5)$$

where f_{1-N} is a focal length of the negative lens located nearest to the object side in said first lens group, and f_{2-N} is a focal length of the second negative lens in said first lens group, as counted from the object side.

5. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group consists of, in order from an object side thereof, a negative lens component, air, a negative lens component, air and a positive lens component,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive element and a negative element and a positive lens component, and

the following condition (6) is satisfied:

$$2 < f_3/IH < 12 \quad \cdots (6)$$

where f_3 is a focal length of said third lens group, and IH represents an image height.

6. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group consists of, in order from an object side thereof, a negative lens component, air, a negative lens component, air and a positive lens component,

said third lens group consists of one lens element,

an aspherical surface that satisfies the following condition (7) is used at the surface located nearest to object side in said second lens group, and

the following condition (4) is satisfied:

$$-1 < (1/r_{a2} - 1/r_{m2})h_2/(1 - n_{a2}') < 0 \quad \cdots (7)$$

$$0.4 < f_3/f_t < 2.5 \quad \cdots (4)$$

where r_{a2} is a paraxial radius of curvature of an aspherical surface II located in said second lens group, r_{m2} is a distance from a point of intersection of an optical axis with said aspherical surface II located in said second lens group to a point on the optical axis where a normal to an arbitrary point (2) between a diameter that is 7/10 of the maximum diameter of an axial light beam on said aspherical surface II and the maximum diameter of the axial beam on said aspherical surface II is closest to the optical axis, n_{a2}' is a refractive index of the lens element located nearest to the object side in said second lens group, h_2 is a height of said point (2) from the optical axis, f_3 is a focal length of said third lens group, and f_t is a focal length of said zoom lens system at a telephoto end thereof.

7. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between

adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group consists of, in order from an object side thereof, a negative lens component, air, a negative lens component, air and a positive lens component,

said third lens group consists of one lens element,

an aspherical surface that satisfies the following condition (7) is used at the surface located nearest to object side in said second lens group, and

the following condition (5) is satisfied:

$$-1 < (1/r_{a2} - 1/r_{m2})h_2/(1 - n_{a2}') < 0 \quad \cdots (7)$$

$$1.2 < f_{1-N}/f_{2-N} < 2.7 \quad \cdots (5)$$

where r_{a2} is a paraxial radius of curvature of an aspherical surface II located in said second lens group, r_{m2} is a distance from a point of intersection of an optical axis with said aspherical surface II located in said second lens group to a point on the optical axis where a normal to an arbitrary point (2) between a diameter that is 7/10 of the maximum diameter of an axial light beam on said aspherical surface II and the maximum diameter of the axial light beam on said aspherical surface II is closest to the optical axis, n_{a2}' is a refractive index of the lens element located nearest to the object side in said second lens group, h_2 is a height of said point (2) from the optical axis, f_{1-N} is a focal length of the negative lens component located nearest to the object side in said first lens group, and f_{2-N} is a focal length of the

second negative lens component in said first lens group, as counted from the object side.

8. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group consists of, in order from an object side thereof, a negative lens component, air, a negative lens component, air and a positive lens component,

said third lens group consists of one lens element,

an aspherical surface that satisfies the following condition (7) is used at the surface located nearest to object side in said second lens group, and

the following condition (6) is satisfied:

$$-1 < (1/r_{a2} - 1/r_{m2})h_2/(1 - n_{a2}') < 0 \quad \cdots (7)$$

$$2 < f_3/IH < 12 \quad \cdots (6)$$

where r_{a2} is a paraxial radius of curvature of an aspherical surface II located in said second lens group, r_{m2} is a distance from a point of intersection of an optical axis with said aspherical surface II located in said second lens group to a point on the optical axis where a normal to an arbitrary

point (2) between a diameter that is 7/10 of the maximum diameter of an axial light beam on said aspherical surface II and the maximum diameter of the axial light beam on said aspherical surface II is closest to the optical axis, n_{a2}' is a refractive index of the lens element located nearest to the object side in said second lens group, h_2 is a height of said point (2) from the optical axis, f_3 is a focal length of said third lens group, and IH represents an image height.

9. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

lenses forming said first lens group are all defined by meniscus lens components, each convex on an object side thereof, and

the following condition (5) is satisfied:

$$1.2 < f_{1-N}/f_{2-N} < 2.7 \quad \cdots (5)$$

where f_{1-N} is a focal length of the negative lens component located nearest to the object side in said first lens group, and f_{2-N} is a focal length of the second negative lens

component in said first lens group, as counted from the object side.

10. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

lenses forming said first lens group are all defined by meniscus lens components, each convex on an object side thereof, and

the following condition (8) is satisfied:

$$-1.35 < f_1/f_3 < -0.4 \qquad \cdots (8)$$

where f_1 is a focal length of said first lens group, and f_3 is a focal length of said third lens group.

11. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between

adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive lens element and a negative lens element and a positive lens component, and

an aspherical surface that satisfies the following condition (7) is used at the surface located nearest to object side in said second lens group:

$$-1 < (1/r_{a2} - 1/r_{m2})h_2/(1 - n_{a2}') < 0 \qquad \cdots (7)$$

where r_{a2} is a paraxial radius of curvature of an aspherical surface II located in said second lens group, r_{m2} is a distance from a point of intersection of an optical axis with said aspherical surface II located in said second lens group to a point on the optical axis where a normal to an arbitrary point (2) between a diameter that is 7/10 of the maximum diameter of an axial light beam on said aspherical surface II and the maximum diameter of the axial light beam on said aspherical surface II is closest to the optical axis, n_{a2}' is a refractive index of the lens element located nearest to the object side in said second lens group, and h_2 is a height of said point (2) from the optical axis.

12. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group

having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive lens element and a negative lens element and a positive lens component while the lens located nearest to an image plane side in said second lens group is defined by a meniscus lens component convex on an image plane side thereof, and

the following condition (9) is satisfied:

$$2.7 < \sum_{2g}/IH < 4.7 \qquad \cdots (9)$$

where $\sum_{2g}$ is a distance on the optical axis from said aperture stop to the surface located nearest to the image plane side in said second lens group, and IH represents an image height.

13. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between

adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive lens element and a negative lens element and a positive lens component while the lens located nearest to an image plane side in said second lens group is defined by a meniscus lens component convex on an image plane side thereof, and

the following condition (4) is satisfied:

$$0.4 < f_3/f_t < 2.5 \quad \cdots (4)$$

where f_3 is a focal length of said third lens group, and f_t is a focal length of the zoom lens system at a telephoto end thereof.

14. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive lens element and a negative lens element and a positive lens component while the lens located nearest to an image plane side in said second lens group is defined by a meniscus lens component convex on an image plane side thereof,

at least two lens components in said first lens group, as counted from an object side thereof, are defined by negative lens components, and

the following condition (5) is satisfied:

$$1.2 < f_{1-N}/f_{2-N} < 2.7 \quad \cdots (5)$$

where f_{1-N} is a focal length of the negative lens component located nearest to the object side in said first lens group, and f_{2-N} is a focal length of the second negative lens component in said first lens group, as counted from the object side.

15. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive lens element and a negative lens element and a positive lens component while the lens located nearest to an image plane side in said second lens group is defined by a meniscus lens component convex on an image plane side thereof, and

the following condition (6) is satisfied:

$$2 < f_3/IH < 12 \qquad \cdots (6)$$

where f_3 is the focal length of said third lens group, and IH represents an image height.

16. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented

lens component consisting of a positive lens element and a negative lens element and a positive lens component,

a thickness ratio between said positive lens element and said negative lens element in said cemented lens component satisfies the following condition (10), and

the following condition (4) is satisfied:

$$1.9 < d_{ce1}/d_{ce2} < 12 \quad \cdots (10)$$

$$0.4 < f_3/f_t < 2.5 \quad \cdots (4)$$

where d_{ce1} is a thickness on an optical axis of said positive lens element of said cemented lens component in said second lens group, d_{ce2} is a thickness on the optical axis of said negative lens element of said cemented lens component in said second lens group, f_3 is a focal length of said third lens group, and f_t is a focal length of said zoom lens system at a telephoto end thereof.

17. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive lens element and a negative lens element and a positive lens component,

a thickness ratio between said positive lens element and said negative lens element in said cemented lens component satisfies the following condition (10),

at least two lens components nearest to the object side in said first lens group are defined by negative lens components, and

the following condition (5) is satisfied:

$$1.9 < d_{ce1}/d_{ce2} < 12 \quad \cdots (10)$$

$$1.2 < f_{1-N}/f_{2-N} < 2.7 \quad \cdots (5)$$

where d_{ce1} is a thickness on an optical axis of said positive lens element of said cemented lens component in said second lens group, d_{ce2} is a thickness on the optical axis of said negative lens element of said cemented lens component in said second lens group, f_{1-N} is a focal length of the negative lens component located nearest to the object side in said first lens group, and f_{2-N} is a focal length of the second negative lens component in said first lens group, as counted from the object side.

18. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said third lens group consists of one lens element,

said second lens group consists of, in order from an object side thereof, a positive lens component, a cemented lens component consisting of a positive lens element and a negative lens element and a positive lens component,

a thickness ratio between said positive lens element and said negative lens element in said cemented lens component satisfies the following condition (10), and

the following condition (6) is satisfied:

$$1.9 < d_{ce1}/d_{ce2} < 12 \quad \cdots (10)$$

$$3 < f_3/IH < 12 \quad \cdots (6)$$

where d_{ce1} is a thickness on an optical axis of said positive lens element of said cemented lens component in said second lens group, d_{ce2} is a thickness on the optical axis of said negative lens element of said cemented lens component in said second lens group, f_3 is a focal length of said third lens group, and IH represents an image height.

19. A zoom lens system comprising, in order from an object side of said zoom lens system, a first lens group having negative power, an aperture stop, a second lens group having positive power and a third lens group having positive power, wherein:

for zooming, said first lens group and said second lens group move on an optical axis with a varying spacing between adjacent lens groups while said third lens group remains fixed,

during said zooming, said stop moves in unison with said second lens group,

said first lens group consists of, in order from an object side thereof, a negative lens component, a negative lens component and a positive lens component, and

said third lens group consists of one lens element having on the object side an aspherical surface that satisfies the following condition (2):

$$-1 < (1/r_{a3} - 1/r_{m3})h_3/(n_{a3} - n_{a3}') < 0 \quad \cdots (2)$$

where r_{a3} is a paraxial radius of curvature of an aspherical surface III located in said third lens group, r_{m3} is a distance from a point of intersection of the optical axis with said aspherical surface III located in said third lens group to a point on the optical axis where a normal to an arbitrary point (3) between the maximum diameter of an axial light beam on said aspherical surface III and an effective diameter including an off-axis light beam on said aspherical surface III is closest to the optical axis, n_{a3} is a refractive index of said aspherical surface III on an object side thereof, n_{a3}' is a refractive index of said aspherical surface III on an image side thereof, and h_3 is a height of said point (3) from the optical axis.

20. An image pickup system using a zoom lens system as recited in any one of claims 1 to 19 as an objective optical

system, wherein an electronic image pickup device is located on an image side of said zoom lens system.